

the 'Oceanic Ichthyology' (p. 205, fig. 215) under the name of *Benthodesmus atlanticus*. The species was founded on specimens obtained on the western edge of the Grand Bank of Newfoundland, off St. Kitts, W.I., and in mid-North Atlantic, at depths varying between 25 and 203 fathoms, and previously referred to *Lepidopus elongatus*, Clarke. I am now able to report its occurrence at Madeira and on the coast of Portugal, whence it has been inadequately described and figured by Vieira as *Lepidopus argenteus*, Bon. (Ann. Sc. Nat. Porto, i. 1894, p. 165, pls. ix. & x.).

Mr. Arendrup had fully realized the interest that attaches to the Madeira specimen, which represented an unnamed species at the time he obtained it, and he had drawn up some notes which I here reproduce in an abridged and slightly altered form, after verification on the original.

Depth of body 22 times in total length, length of head $6\frac{2}{3}$ times. Vent marking $\frac{2}{5}$ on the total length. Occipital crest very feeble; eye 6 times in head, $2\frac{1}{5}$ in snout; lower jaw projecting, with a fleshy appendage anteriorly; teeth acute, compressed, 19 in upper jaw (including 2 large anterior fangs), 20 in lower jaw, without any larger ones. 7 branchiostegals. Gill-rakers few, widely separated. Dorsal with about 156 rays, beginning halfway between eye and root of pectoral, the longest rays not quite so long as diameter of eye. Anal with 26 free rays. Ventrals represented by minute scale-like scutes. Pectoral 3 times in length of head. Caudal small, forked. Caudal peduncle depressed, 5 times in length of head. Uniform silvery; margin of dorsal black for the first 10 or 12 rays.

XXX.—On the Preliminary Stages and Mode of Escape of the Imago in the Dipterous Genus *Xylomyia*, Rond. (Subula, Mg. et auct.), with especial reference to *Xylomyia maculata*, F.; and on the Systematic Position of the Genus. By E. E. AUSTEN, Zoological Department, British Museum.

I.

PRELIMINARY STAGES AND MODE OF ESCAPE OF THE IMAGO.

THROUGH the courtesy of the Rev. H. S. Gorham the new collection of British Diptera in the National Museum has recently been enriched by a (δ) specimen of the rare fly *Xylomyia maculata*, F., together with its puparium and the skin of the pupa from which it was bred.

Xylomyia maculata is an extremely handsome insect, rather more than 9 millim. (4·5 lines) in length, shining black, with the thorax spotted and the abdomen banded with yellow, with yellow legs, the tips of the posterior femora and tibiæ broadly banded with black, and the ends of the tarsi infuscated. Mr. Gorham bred eleven specimens of the fly from pupæ found with some forty others on June 29, 1898, in a rotten oak-tree in the New Forest.

Mr. G. H. Verrall's 'List of British Diptera' (1888) includes three species of *Xylomyia*, of which two (*X. varia*, Mg., and *X. maculata*, F.) are printed in italics, as requiring confirmation, while the third (*X. marginata*, Mg.) appears in ordinary type, as an authenticated member of the British fauna. Of these three species, two (*maculata* and *varia*) are given by Walker, in the 'Insecta Britannica.—Diptera' (vol. i. 1851, p. 34), under *Subula**. With reference to *S. maculata* Walker writes:—"Very rare; inhabits the New Forest, Hampshire. In Mr. Stephens's collection." While as to *varia* he says:—"Very rare. In the British Museum. The larva feeds on the wood of the oak."

A (♀) specimen of *Xylomyia maculata* (placed under *Xylophagus*, and labelled "*scutellata?*"), with a puparium in which the pupa-skin is sticking precisely as in our latest acquisition, is still contained in the Museum in the old Stephensian Collection of British Diptera, which also includes a male and female of what appears to be a variety of *X. varia*,

* The name *Subula*, as applied to a genus of Diptera, owes its origin to a note by Meigen published in 1820 (Syst. Besch. bek. europ. zweifl. Insekten, ii. p. 15), in which it is stated that Megerle v. Mühlfeld forms the genus *Subula* out of Meigen's second division of the genus *Xylophagus*, comprising the three species (*maculatus*, F., *varius*, Mg., and *marginatus*, Mg.) mentioned above. *Subula*, however, is preoccupied, having been used by Schummel in 1817 for a genus of Mollusca, and in 1861 *Xylomyia* was proposed in its stead by Rondani (Dipt. Ital. Prodróm. iv. p. 11). This emendation was ignored by Schiner, both in his 'Fauna Austriaca' and 'Catalogus Systematicus Dipterorum Europæ,' and, for some unknown reason, modern continental dipterists, such as Brauer and van der Wulp, still follow Schiner's lead. Osten Sacken, who noticed Rondani's name in 1886 (Biol. Centr.-Am., Dipt. i. p. 23), did not adopt it, since he was of the opinion that "a change in a name of such old standing involves much more inconvenience than its retention." In the face, however, of modern ideas on the subject of priority such an objection is scarcely valid, and it is safe to say that the sooner the name *Xylomyia* is definitely recognized the better. As indicated above, Rondani's designation was duly adopted by Verrall in his 'List'; yet van der Wulp ('Catalogue of the Described Diptera from South Asia': The Hague, Martinus Nijhoff, 1896, p. 46), while remarking that *Subula* is preoccupied, is apparently ignorant of the existence of Rondani's *Xylomyia*.

Mg., with the abdomen, with the exception of the semilunar depression at the base, entirely black and without the incisions between the segments being "very narrowly yellow," as described by Meigen *. As is unhappily the case throughout the Stephenson Collection, these three specimens are without locality-labels. *Xylomyia maculata* as a British insect was also known to Westwood, for in the 'Introduction to the Modern Classification of Insects,' vol. ii. (1840) p. 534, he writes:—"The Rev. F. W. Hope has also given me specimens of *Subula maculata* and its preparatory state; the latter found by him in a dry rotten tree in the New Forest, and from which he reared the imago. It is larger than that of *X. varia*, but does not otherwise differ from it." It will have been noticed that all the British examples of *Xylomyia maculata* hitherto recorded come from the same locality.

In Verrall's 'List' the genus *Xylomyia* is placed with *Xylophagus*, Mg., in the family Xylophagidæ; in Schiner's 'Fauna Austriaca' the same family is made to include a third genus, *Pachystomus*, Latr. (for *Rhagio syrphoides*, Pz.), which is stated by Osten Sacken (Berl. ent. Z. xxvi. (1882) p. 379) to be "nothing but a *Xylophagus* with broken antennæ." While, however, the differences between *Xylomyia* and *Xylophagus* are of more than generic rank even in the perfect state †, in the preliminary stages they are much more marked. Whereas the larvæ of *Xylomyia* as well as of *Xylophagus* live in the stumps and beneath the bark of dead

* *Xylomyia varia*, Mg., is a considerably smaller species than *X. maculata*, measuring only 5·3 to 7·3 millim. (3 to 3·5 lines) in length, instead of 9·3 millim. (4·5 lines), but the antennæ are longer; the dorsum of the thorax is without yellow markings, and the legs, except the tips of the tarsi, are yellow. *Xylomyia marginata*, Mg., is not represented in either of our collections of British Diptera; but two (♀) specimens from Germany in our general collection of Diptera show that, while agreeing in length with *X. varia*, it is a much broader and bulkier insect, and consequently, as regards size, occupies an intermediate position between *X. maculata* and *X. varia*. The antennæ are shorter than in the latter species; the thorax is without yellow markings on the dorsum and is not shining, being finely and closely punctured and clothed with very short yellowish hair, forming indistinct longitudinal stripes; the hind margins of the abdominal segments from the second to the fifth are narrowly yellow; the legs are yellow, with *black coxæ*, and the ends of the tarsi and the tips of the hind femora infuscated; the hind femora are distinctly swollen (which is not the case in the other two species), and bear a row of minute black tubercles on the distal half beneath; the venation is as in *X. varia*. In *X. maculata* the upper branch of the third vein is distinctly more slender than the main stem, and is shorter and flatter than in the other two species, while (as pointed out by Schiner) the first vein that leaves the discal cell is very strongly curved.

† Cf. O. Sacken, Berl. ent. Z. xxvi. p. 364 (referred to by Brauer, Denkschr. k. Akad. Wiss. Wien, Bd. xlvii. p. 23, note).

trees, those of the latter alone are carnivorous and prey upon beetle larvæ. The larva of *Xylophagus*, as described by Brauer (Denkschr. k. Akad. Wiss. Wien, Bd. xlvii. (1883) pp. 23-24, Taf. iv. figs. 80-83—*Xylophagus cinctus*, F.), is a cylindrical fleshy grub, with a parchment-like integument, a greatly elongated head (*Kieferkapsel*, Brauer), and with scutes or bands of chitin on the first ring or on the first three postcephalic rings; the pupa is obtectate (*Nympe eine freie Mumiépuppe*, Brauer)*.

The larva of *Xylomyia*, on the other hand, is a very different-looking creature, which closely resembles that of certain well-known Stratiomyidæ, such as *Chloromyia formosa*, Scop., and *Actina tibialis*, Mg.† The dried larva-skin (puparium) of *Xylomyia maculata*, presented by Mr. Gorham, must, as in the case of ordinary Stratiomyid larvæ, be precisely similar to the living larva in shape and general appearance, owing to the hardness of the shell-like integument, which is covered with closely-set ovoid scales or plates, and does not admit of contraction. It is dark reddish brown in colour, slightly tapering towards the extremities and oval in transverse section; the lateral margins of the body-segments are expanded into tumid ridges. The head is very similar in general appearance to that of the larvæ of *Sargus*, *Chloromyia*, or *Actina*. Our larva-skin is 15·5 millim. (7·5 lines) in length and about 4·5 millim. (or just over 2 lines) in greatest breadth; it consists of eleven segments behind the head, and from the fifth to the eighth (postcephalic) segments the sides of the body are nearly parallel; the last segment, which is somewhat truncate, bears on its hind margin a pair of tumid lips enclosing a transverse horizontal cleft, in which open the posterior stigmata; the anterior stigmata are found in the usual position, one on each side of the first postcephalic (the prothoracic) segment. Apparently, therefore, the larva is

* The larva and pupa of *Xylophagus cinctus*, F., were described more than twenty years ago by the late Dr. F. Buchanan White ("Metamorphoses of *Xylophagus cinctus*, F., and *X. ater*, F.," by F. Buchanan White, M.D., F.L.S., Ent. Month. Mag. vol. xiii. (1876) pp. 160-162), who found the larvæ of both our British species of *Xylophagus* in Braemar—those of *X. cinctus* under the bark of dead fir-trees, and those of *X. ater* between the bark and wood of dead birch-stumps. The metamorphoses of *Xylophagus cinctus* have also been dealt with by Perris (Ann. Soc. Ent. Fr. sér. 4, t. x. (1870) pp. 202-205, pl. iii. figs. 70-79) in his paper on the "Insectes du Pin Maritime."

† Cf. a description of the larva of *Chlorisops (Actina) tibialis*, Mg., by Adam Handlirsch (Verh. z.-b. Ges. Wien, Bd. xxxiii. (1883) pp. 243-245, woodcuts in text); the author found the larvæ of this species in the middle of August near Mödling, in Lower Austria, in forest-mould, mixed with much decaying vegetable matter.

amphipneustic, thus agreeing with the larvæ of *Xylophagus*, but differing from those of Stratiomyidæ. On each side, however, of the first six abdominal segments, immediately behind the tumid lateral ridge, and so in the angle which each segment forms with the next, I observe a small papilla. On examining the larva-skin with a microscope I cannot detect an aperture in any of these papillæ; but it seems in the highest degree probable that they represent stigmata which have disappeared, but were functional in the larvæ of ancestors of the existing species of *Xylomyia*. At any rate, on examining them one is involuntarily reminded of the arrangement of the stigmata in the larva of *Actina tibialis*, Mg., as described by Handlirsch (*loc. cit.* p. 243), in which it is stated that (besides the ordinary stigmata at each end of the body) there is a very small stigma on each side of the first six segments of the abdomen*.

The body of the larva is nearly bare; each postcephalic segment bears a stout recurved yellowish-brown hair on the tumid ridge on each side, and, in the case of the first ten segments, a transverse row consisting of six similar hairs on the dorsal side; there is also a similar row of hairs on the ventral side; the eleventh segment has two hairs on the upper-side, apparently four pairs beneath, and a pair, which curve forwards, on the posterior margin—one on each side between the lips of the stigmatic cavity and the posterior angle.

The larva-skin (puparium) of *Xylomyia maculata* agrees very closely with that of the American *Subula pallipes*, Lw., as described by C. H. Tyler Townsend (*Ent. News*, 1893, p. 164), except for the absence of the transverse rows of small tubercles stated by Townsend to occur on segments 5 (fourth postcephalic) to 11. In this connexion it is interesting to note that the integument of the larva of *Xylomyia varia* (*Xylophagus varius*), Mg., as described by von Roser †, and that of the sixth and following segments of the larva (larva-skin) of *Xylomyia marginata* (*Xylophagus marginatus*), Mg., as described by Wesmael ‡, also bear transverse rows of

* Handlirsch appears to be unaware of the existence of the lateral papillæ in the larva of *Xylomyia*; at any rate, he merely states (*loc. cit.* p. 245):—"In *Subula* it has not yet been determined with absolute certainty whether the larva is likewise peripneustic, since the stigmata on the body are not easily recognizable, owing to the scale-like structure of the cuticle."

† *Naturwiss. Abhandlungen*, Stuttgart u. Tübingen, Bd. ii. Heft 2 (1828), p. 188.

‡ *Cf.* *Ann. Soc. Ent. Fr.* t. vi. (1837), *Bulletin Entomologique*, p. xc. According to L. Dufour (*Ann. Sc. Nat., Zoologie*, sér. 3, t. vii. (1847) p. 13), in the larva (larva-skin) of *X. marginata* all the abdominal segments bear transverse rows of tubercles. This author writes:—"Les

tubercles. Von Roser states that the segments have "a transverse row of from eight to ten dirty whitish-yellow round tubercles, each of which bears a small bristle of similar colour. A more numerous row of smaller tubercles is more or less distinctly visible at the base of the rings."

The most remarkable phenomenon presented by *Xylomyia*, apart from the striking resemblance of its larva to that of certain Stratiomyidæ, is the way in which the imago makes its escape from the pupa. As in ordinary Stratiomyidæ, pupation takes place within the dried larva-skin (puparium), which, owing to its hardness, doubtless affords an excellent protection; but, instead of the fly making its escape in the ordinary way from the anterior extremity of the puparium, leaving the pupa-skin behind it within the latter, the pupa itself, shortly before the imago emerges, makes its way partly out of the puparium through a longitudinal cleft which appears in the middle dorsal line of the second and third thoracic and first two abdominal segments. The pupa does not leave the puparium altogether, but its posterior extremity remains fixed in the cleft, and in this position the semi-transparent shining yellowish-brown pupa-skin is left sticking after the escape of the fly, which is no doubt facilitated by the fixation of the pupa-skin. The abdominal segments of the pupa, from the second to the sixth*, bear a transverse row of stiff, appressed, backwardly directed bristles, reddish brown in colour, and arranged in groups, each group having in the middle a bristle longer than the rest. The function of these bristles evidently is to assist the pupa in raising itself out of the puparium. For a more detailed account of the pupa the reader may be referred to Townsend's description of the pupa of *Subula pallipes*, Lw. (*loc. cit.* p. 165).

The fixture of the pupa (and pupa-skin after the escape of the fly) by the posterior extremity in the cleft in the pupa-

segments thoraciques sont tout à fait lisses, tandis que les suivants ont, tout près de leur bord antérieur, une série transversale de fort petites aspérités sous formes de points." The larva of *Xylomyia (Subula) citripes*, Duf., as described by Dufour himself (*ibid.* pp. 7-8; *cf.* t. vi. pl. xvii. fig. 12), also has transverse rows of tubercles (a single row on the three thoracic segments and a double row—one of very minute tubercles near the anterior margin and another of larger tubercles towards the middle—on those of the abdomen). So far as we can judge at present, therefore, in the absence of tubercles the larva of *X. maculata* is unique.

* Townsend (*loc. cit.* p. 165) writes "segments 2-7" in the case of the pupa of *Subula pallipes*, Lw.; the statement may very possibly also apply to the pupa of *X. maculata*, but in the specimen before me I cannot trace the abdominal segments back beyond the sixth, as the remainder are hidden in the puparium.

rium is no mere accidental occurrence; on the contrary, it appears to be invariable in the genus *Xylomyia*. It was recorded seventy years ago by von Roser (*loc. cit.* p. 190) in the case of *Xylomyia varia* (*Xylophagus varius*), Mg., and one of von Roser's specimens showing this was given by him to Westwood, who mentions it in the 'Introduction' (vol. ii. p. 534), and illustrates it by a (very poor) figure (*op. cit.* p. 531, fig. 127, 14). Dufour, who bred some forty specimens of his species *Subula citripes*, actually witnessed the partial emergence of the pupa from the puparium and the subsequent escape of the fly; he describes how the pupa works its way out through the rent in the thoracic segments of the larva-skin until two thirds of its length project, and states that the "domino de la nymphe" may be found in the rent after the imago has left it*. Lastly, Townsend writes (*loc. cit.* pp. 163, 164) of *Subula pallipes*, Lw.:—"The pupa works itself more than halfway out through this opening [in the puparium], and there remains. The fly then escapes, leaving at least the posterior one third of the pupal skin still enclosed within the split portion of the puparium."

II.

SYSTEMATIC POSITION.

So long ago as 1882 it was shown by Osten Sacken that *Subula* (*Xylomyia*) could not be allowed to remain in the same family as *Xylophagus*, where most of the previous writers had been content to leave it, but that the original family Xylophagidæ must be dissolved, *Subula* being placed "among the Beridina, until its relationship is cleared up." Osten Sacken proceeded to say:—"Xylophagus and *Cœnomyia* would form the stock of the reformed family Xylophagidæ, which must be brought in nearer connexion with the Leptidæ, and not with the Notacantha" †. Shortly before this Brauer had been led to a similar conclusion through study of the larvæ; he wrote ‡:—"In the Xylophagidæ we find two divisions, of which one (*Subula*), through the larva and its mode of pupation, reminds us of the true Stratiomyidæ, while the other (*Xylophagus*) recalls Tabanidæ and exhibits a free nymph." The remarkable external resemblance between the larvæ of *Xylomyia* and those of certain Stratiomyids

* Ann. Sc. Nat., Zoologie, sér. 3, t. vii. (1847) pp. 10-11, t. vi. pl. xvii. fig. 18.

† C. R. Osten Sacken, "On Professor Brauer's Paper: Versuch einer Charakteristik der Gattungen der Notacantha, 1882," Berl. ent. Z. Bd. xxvi. (1882) p. 365.

‡ Denkschr. k. Akad. Wiss. Wien, Bd. xlv. (1882) pp. 61-62.

(such as *Sargus*, *Chloromyia*, and *Actina*), as well as the agreement in the mode of pupation, has indeed attracted the attention of most authors who have studied the life-history of the various species. Thus, in 1828, von Roser (*loc. cit.* p. 188) declared the larva of *Xylophagus varius* (*Xylomyia varia*), Mg., to be very similar to that of *Stratiomys chamæleon*, excluding the tubular tail; Westwood writes ('Introduction' &c. ii. (1840) p. 535):—"The genus *Subula*, as discovered by M. van Roser and the Rev. F. W. Hope, has a metamorphosis exactly like *Sargus*, the pupa being enclosed within the unaltered larval skin, but the transformations of the typical *Xylophagi* are quite different"; Dufour (*loc. cit.* p. 7 (1847)) states that the larva of *Sargus Reaumurii*, F. (= *Chrysonotus bipunctatus*, Scop.), appears to belong to the same class as that of *Subula citripes*, Duf.; and Perris (Ann. Soc. Ent. Fr. sér. 4, t. x. (1870) p. 206) alludes to the close resemblance in outward appearance between the larvæ of *Subula* and those of *Pachygaster* and *Sargus*. The agreement in general appearance and character of the integument between larvæ of *Xylomyia* and those of *Chloromyia* or *Actina* must in fact strike anyone, and to attempt to argue that such a remarkable external resemblance is due to mere *convergence*, brought about by adaptation to a similar mode of life, is manifestly out of the question. To refute such a suggestion it is only necessary to compare a larva of *Xylomyia* with that of *Xylophagus* or with any of the other dipterous larvæ to be found in the mouldering stumps of dead trees. It is true that the larvæ of *Xylomyia* appear to be amphipneustic, while those of Stratiomyidæ in general are peripneustic; but, according to Brauer, the number and position of the stigmata is a very variable character, which has arisen by adaptation in so far as these apertures are peripheral or merely polar. Moreover, as I have shown above, the larva of *Xylomyia* appears to exhibit distinct *vestiges* of peripheral stigmata.

With reference to the importance of insect larvæ as indicating affinities, Brauer writes*:—"To contemplate earlier developmental stages of animals is, however, to cast a glance at their pedigree, which is otherwise beyond our reach, and I have already shown in another place ("Betragungen über die Verwandlung der Insekten im Sinne der Descendenztheorie.—II.," Verh. z.-b. Ges. Wien, 1878, p. 151 *et seq.*) that even such *acquired* larval forms as those of the insects are adapted for this purpose *because they have become hereditary.*"

There is no necessity to repeat the arguments (drawn from

* Denkschr. k. Akad. Wiss. Wien, Bd. xlvii. (1883) p. 3.

the imagines, larvæ, mode of pupation, and nervous system of the larvæ) used by Osten Sacken in his paper of 1882, to which reference has already been made, to divorce *Subula* from *Xylophagus* and substantiate its inclusion among the Stratiomyidæ (Beridina), especially as the paper in question is written in English. But it may be interesting to note that, as pointed out by Osten Sacken himself, his conclusions (at least so far as concerns *Subula*) were anticipated by Latreille and Westwood. The latter, in the 'Introduction' &c. vol. ii. pp. 533-534, and in the appended "Synopsis of the Genera of British Insects," p. 130, makes a family Beridæ, to include the genera *Subula*, *Beris*, and *Actina*, and another—the Cœnomyidæ—comprising *Xylophagus* and the non-British genera *Pachystomus* (= *Xylophagus*) and *Cœnomyia*. Westwood, however, erred in including his Cœnomyidæ among the Notacantha.

In 1891 Osten Sacken formally merged his Xylophagidæ (i. e. *Xylophagus* + *Cœnomyia*) in the Leptidæ, the death-warrant of the former family running as follows:—"The very problematic family of Xylophagidæ must be given up, and its contents, temporarily at least, united with the Leptidæ"*. Prior to this (in 1886—Biol. Centr.-Am.) Osten Sacken had placed *Subula* at the head of the family Stratiomyidæ; and in this connexion it may be remarked that the Beridina are placed by Osten Sacken at the commencement of the Stratiomyidæ † instead of at the end, where they (Berinæ) are to be found in Schiner's Catalogue as well as in Verrall's 'List,' and in one of the recent catalogues by van der Wulp ‡. The position of *Xylomyia* at the commencement of the Stratiomyidæ instead of at the end is supported by a study of the venation, which exhibits several noteworthy divergences from the ordinary Stratiomyid type: it is sufficient to refer to the shape of the discal cell, which is very different from that which is a special characteristic of the Stratiomyidæ.

The conclusion, therefore, at which we arrive is that *Xylomyia* represents a primitive ancestral form of Stratiomyid, given off from the common stem after the evolution of

* C. R. Osten Sacken, "Suggestions towards a better Grouping of certain Families of the Order Diptera," Ent. Month. Mag. ser. 2, vol. ii. (1891) p. 38.

† Cf. 'Catalogue of the Described Diptera of North America' [2nd ed.], 1878, p. 43.

‡ V. d. Wulp, 'Catalogue Described Dipt. S. Asia' (1896), *supra cit.* p. 58. In the recently published 'Nieuwe Naamlijst van Nederlandsche Diptera, door F. M. van der Wulp en Dr. J. C. H. De Meijere.—Uingegeven door de Nederlandsche Entomologische Vereeniging als Bijvoegsel tot deel xli. van het Tijdschrift voor Entomologie' ('S Gravenhage, Martinus Nijhoff, 1898), the first genus of the Stratiomyidæ is *Beris*.

the characteristic type of larva and mode of pupation, but before the assumption on the part of the imago of the equally characteristic features (venation, spurless tibiæ *) exhibited by the more specialized types of the family; so that, in the present state of our knowledge, the only logical place for the genus is at the beginning of the Stratiomyidæ †.

BIBLIOGRAPHICAL NOTICES.

The Study of Man. By ALFRED C. HADDON. 8vo. Pages xxxi and 512. With 49 Woodcuts and 8 Plates. Bliss and Co., London; Putnam and Sons, New York. 1898.

THIS comprehensive work on Anthropology, descriptive and illustrated, is a good introduction to that science, by Professor Haddon, D.Sc. &c., and is one of the "Progressive Science Series." The several subject-matters are treated as far as possible in a popular manner.

* The anterior tibiæ in *Xylomyia* are always devoid of the apical spurs, with which the middle and posterior tibiæ are normally armed; in certain exotic species, however, there appears to be a tendency towards the disappearance of the spurs on the posterior tibiæ also, for in a species (at present undetermined) from Ceylon, collected and presented by Lt.-Col. Yerbury, the spurs on the hind tibiæ are very small, while in *Xylomyia* (*Solva*) *hybotoides*, Walk., from Gilolo, they are apparently absent altogether.

† Lest it should be thought that, after what had previously been written by Osten Sacken and by Brauer, it was unnecessary to say anything further as to the question of the true systematic position of the genus *Xylomyia*, I may perhaps be permitted to point out that the conclusions of the authors in question appear to be ignored by recent writers and catalogue-makers. Verrall, as already stated, in his 'List of British Diptera' (1888), placed *Xylomyia* among the Xylophagidæ, and his example is followed by van der Wulp in the two recently published catalogues of Diptera from South Asia and the Netherlands referred to above. Lastly, Williston, in his 'Manual of the Families and Genera of North American Diptera' (1896), p. 43, boldly places *Xylomyia* (the extraordinary misprint *Subula Omyia*, which represents the genus on the page referred to, is noted in the "Corrigenda" on p. iv, where Rondani's designation is substituted) among the Leptidæ, uniting it with the American genera *Glutops*, Burgess, and *Arthroceras*, Williston, to form the subfamily Arthroceratinæ. Unfortunately I cannot claim personal acquaintance with either of these genera, but (as is evident from the statements of their authors) they are so different from *Xylomyia* in general habitus—not to mention the fact that in them the marginal vein encompasses the entire border of the wing—that it is difficult to understand how anyone could place *Xylomyia* in the same subfamily. Williston, however, appears to think that in *Xylomyia* also the marginal vein runs right round the wing (*cf.* 'Entomologica Americana,' vol. i. (1885-86) p. 115), whereas as a matter of fact it stops short at the third vein, or at any rate does not extend beyond the second vein which issues from the discal cell.

On the whole, therefore, it seemed worth while to utilize this opportunity for once more drawing attention to the facts: that a genus should have been assigned to three families by contemporary writers is scarcely creditable to the present condition of dipterology.